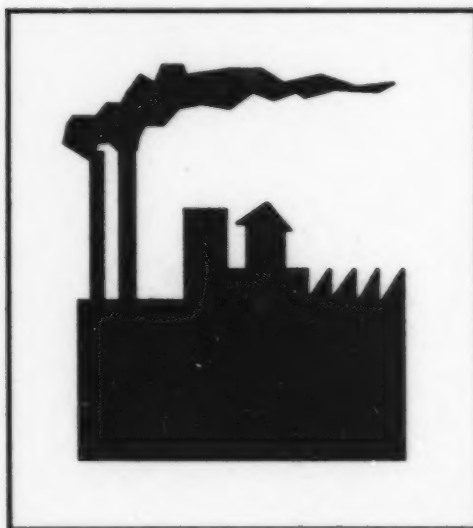
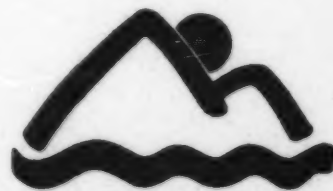


Guidelines for Industry Emergency Response Contingency Plans



March 1992



**British Columbia
Handle with care**

BC

ES 248

D: G854

1992

C 4



British Columbia
Handle with care

Guidelines for Industry Emergency Response Contingency Plans

**Environmental Emergency Services Branch
Ministry of Environment,
Lands and Parks
March 1992**

Canadian Cataloguing in Publication Data
British Columbia. Environmental Emergency Services
Branch.
Guidelines for industry emergency response
contingency plans

Cover title.
ISBN 0-7726-1539-X

1. Emergency management - British Columbia. 2.
Industrial safety - Law and legislation - British
Columbia. I. Title.

HV551.5.C32B74 1992 363.3'48'09711 C92-092148-5

PREFACE

Any facility that stores, manufactures, transports or handles dangerous goods or hazardous chemicals should establish a plan to respond to emergencies involving the release of these substances into the environment. Such plans should identify potential hazards, develop systems for preventing accidents, and provide appropriate mechanisms for minimizing risk, loss, and damage resulting from such incidents.

These guidelines have been developed under the authority of the Minister of Environment, Lands and Parks, pursuant to the Waste Management Act. Their main purpose is to promote development of comprehensive emergency response plans by industry. They identify principal components of a contingency plan to encourage consistency in approach and content. They also serve as a guide to Ministry staff when reviewing existing plans and requesting new ones from industry.

This document is intended as guidance for a number of different industries including chemical, mining, metallurgical, oil and gas, petroleum, food and forest products industries. Plans based upon these guidelines should satisfy Ministry concerns, but final acceptance by the Ministry will be determined by regional staff.

Although the primary application of this document is stated in its Purpose and Scope section, it is important to note that users have the responsibility of judging the extent of its suitability to their specific situation.

In 1991, the Canadian Standards Association and the Major Industrial Accidents Council of Canada (MIACC) jointly developed a National Standard of Canada, CAN/CSA-Z731-M91, on Emergency Planning for Industry. The Ministry endorses the use of the national CSA standard for preparing emergency response plans in the province in conjunction with these guidelines.

These guidelines will be periodically reviewed and amended by the Ministry. Enquiries and comments regarding them should be made to the Director, Environmental Emergency Services Branch, Ministry of Environment, Lands and Parks, Parliament Buildings, Victoria, B.C. V8V 1X4 or to any of the B.C. Environment regional offices identified at the back of this document.

ACKNOWLEDGEMENTS

This manual has been prepared by the Environmental Emergency Services Branch of the Ministry of Environment, Lands and Parks. The Ministry gratefully acknowledges the contribution and comments from various B.C. industry associations including the Canadian Petroleum Products Institute, Mining Association, Council of Forest Industries, and Chemical Manufacturers' Association.

Thanks are also due to all those individuals and agencies who provided very useful comments and advice on the content of this document.

CONTENTS

PREFACE	i
ACKNOWLEDGEMENTS	ii
I INTRODUCTION	1
1.0 PURPOSE AND SCOPE	1
2.0 DEFINITIONS	1
II CONTENTS OF A TYPICAL PLAN	3
1.0 POLICY STATEMENT	3
2.0 PURPOSE AND SCOPE	3
3.0 PRE-EMERGENCY PLANNING	4
3.1 Hazard Identification	4
3.2 Risk Analysis	4
3.3 Legislation and Industry Standards	5
3.4 Emergency Organization and Responsibilities	5
3.5 Resources	6
3.6 Internal Alerting	6
3.7 External Alerting	7
3.8 Communications	7
3.9 Public Affairs	7
4.0 EMERGENCY RESPONSE	8
4.1 Response Action Decision	8
4.2 Plan Activation and Response Mobilization	8
4.3 Incident Site Security	9
4.4 Response Action/Containment/Cleanup	9
4.5 Emergency Operations Centre	10
4.6 Evacuation	10
4.7 Disposal of Spilled Contaminants and Debris	11
4.8 Site Restoration/Remediation	11
4.9 Post-Incident Evaluation	12
5.0 TRAINING AND PRACTICE DRILLS	12
5.1 Training	12
5.2 Practice Drills	13
6.0 PLAN EVALUATION	14

7.0 PLAN UPDATES	14
8.0 APPENDICES	14
III REFERENCES	16
IV MINISTRY OF ENVIRONMENT, LANDS AND PARKS REGIONAL OFFICES	17

I

INTRODUCTION

1.0 PURPOSE AND SCOPE

The primary purpose of these guidelines is to provide owners and operators of industrial facilities with guidance in the development of a contingency plan for a timely and effective response to industrial emergencies involving the release of hazardous chemicals or dangerous goods to the environment. The guidelines will also serve to assist the Ministry staff for the purpose of reviewing industry contingency plans. The guidelines do not necessarily represent Ministry policy concerning emergency response plans.

The guidelines are intended for application to a number of different industries including chemical, mining, metallurgical, oil and gas, petroleum, food and forest products, and other miscellaneous industries. Although some sections of this document may be used by operators of small industries such as service stations, saw mills, fuel storage and other facilities, not all components of the document may be applicable or necessary.

The guidelines are applicable to all man-made emergencies (e.g., explosions, fire) as well as emergencies involving natural occurrences (e.g., floods, earthquakes, tornados).

The guidelines do not necessarily constitute a model contingency plan for any specific public or private industry.

Ministry legislation pertaining to industry contingency planning includes the Environment Management Act and Waste Management Act, and regulations thereunder. Specifically, under the Waste Management Act, the Minister may order a person having charge of a polluting substance to prepare a contingency plan in accordance with the Minister's directions.

2.0 DEFINITIONS

Accident means an unexpected event that results in loss or injury to a person and/or damage to property or the environment.

Dangerous Goods means goods defined in section 2 of the *Transportation of Dangerous Goods Act* (Canada) and regulated in the federal regulations. Dangerous goods include explosives, compressed and liquified gases, flammable and combustible materials, oxidizing materials and organic peroxides, poisonous and infectious substances, radioactive materials, corrosives, and miscellaneous dangerous goods.

Emergency means, in the context of these guidelines, an accidental situation involving the release or imminent release of dangerous goods or other substances that could result in serious adverse effects on the health and/or safety of persons or the environment. An emergency may be the result of man-caused or natural occurrences such as, but not limited to, process upsets, uncontrolled reactions, fires, explosions, threats, structural failures, tornados, earthquakes, floods, and storms.

Emergency Response Plan, Emergency Plan, or Contingency Plan means a detailed program of action to control and/or minimize the effects of an emergency requiring prompt

corrective measures beyond normal procedures to protect human life, minimize injury, optimize loss control and reduce the exposure of physical assets and the environment.

Hazard means an event with a potential for human injury, damage to property, damage to the environment, or some combination thereof.

Incident Command System means a method by which the response to an extraordinary event, including a spill, is categorized into functional components and responsibility for each component is assigned to the appropriate individual or agency.

Risk means the chance of a specific undesired event occurring within a specified period or in specified circumstances. It may be either a frequency or a probability of a specific undesired event taking place.

Risk Analysis means the identification of undesired events that lead to the materialization of a hazard, the analysis of the mechanisms by which these undesired events could occur and, usually, the estimation of the extent, magnitude, and likelihood of any harmful effects.

Risk Assessment means the quantitative evaluation of the likelihood of undesired events and the likelihood of harm or damage being caused by them, together with the value judgments made concerning the significance of the results.

Risk Frequency means the number of occurrences per unit of time.

Risk Management means the program that embraces all administrative and operational programs that are designed to reduce the risk of emergencies involving acutely hazardous materials. Such programs include, but are not limited to, ensuring the design safety of new and existing equipment, standard operating procedures, preventive maintenance, operator training, accident investigation procedures, risk assessment for unit operations, emergency planning, and internal and external procedures to ensure that these programs are being executed as planned.

Spill means an unauthorized release or discharge of a dangerous good into the environment.

II

CONTENTS OF A TYPICAL PLAN

1.0 POLICY STATEMENT

Every organization or operation should have a policy statement reflecting its commitment to contingency planning and emergency response procedures. The statement is usually signed by a senior official of the organization such as the Chief Executive Officer or the company president.

A policy statement should include:

- management's commitment to safeguard the health and safety of the employees and the public and to protect the environment.
- a statement of the company's priorities in the event of a spill. Generally priority is in the order of the immediate safety of employees at the site and the members of the surrounding community, followed by protection of the environment.
- a clear indication of the first line supervisor's authority for emergency action and expenditure.
- a statement of authority regarding who will deal with public and media inquiries.
- a statement concerning the company's plan to monitor compliance with this policy.
- the effective date of the plan.
- a schedule for review and for testing/exercising of the plan.

2.0 PURPOSE AND SCOPE

This section should state the intent of the plan, as well as general applicability and responsibilities critical to emergency operations covered under the plan.

The purpose of formulating a contingency plan is to develop a state of readiness which will allow for a prompt and orderly response to an emergency.

Contingency plans should be structured around three major objectives:

- understanding the type and extent of a potential emergency
- establishing a high order of preparedness
- ensuring an orderly and timely decision-making and response process

Prevention is by far the most effective way of reducing or eliminating the potential for a spill. This approach is beyond the scope of these guidelines and is not dealt with in detail in this publication.

Contingency plans are normally required at several levels for response to spills of varying magnitude and they should be designed to easily interrelate.

The terms of reference for the plan should include such items as:

- whether or not the plan is for an individual operation or a part of an industry co-operative in a given area.
- the geographic and physical location(s) covered by the plan.
- types of emissions or spills which the plan is designed to address including spills to land, water and air. This should include all dangerous goods and hazardous chemicals being handled along transportation routes and at the particular plant for which the plan is being developed.
- a list of any other organizations or groups having some responsibility under the plan.

Finally, the plan must be compatible and integrated with the disaster, fire and/or emergency response plans of local, provincial, and federal agencies.

3.0 PRE-EMERGENCY PLANNING

3.1 Hazard Identification

The first step in planning is an identification of potential hazards. This section should identify all potential on-site and off-site hazards of the operation, and the type of damage that may result. This requires information on both toxicological and physicochemical properties of the dangerous goods being handled. The potential impact on downwind air quality or downstream water quality from an accidental release and danger to human and animal health should be clearly identified. Man-made perils such as fire, explosion, transportation accidents, pipeline breaks or equipment failure should be considered in addition to the natural perils such as floods, earthquakes or land slides.

3.2 Risk Analysis

The second step of the process is to determine the risk of an incident associated with each hazard. The basic procedure in a risk analysis is as follows:

- identify potential failures or accidents (including frequency),
- calculate the quantity of material that may be released in each failure,
- estimate the probability of such occurrences, and
- evaluate the consequences of such occurrences.

This combination of consequences and probability will allow the hazards to be ranked in a logical fashion to indicate the zones of important risk. Criteria should then be established

by which the quantified level of risk may be considered acceptable to all parties concerned. However, for very high risk areas or resources, worst case scenarios should be developed.

To reduce or eliminate risk, consideration should also be given to spill prevention in conjunction with the preparation of a contingency plan.

For this purpose, workers involved in operating the plant, equipment or systems should be encouraged to provide information concerning weaknesses in systems or operating procedures, "near misses," and potential problems they have observed, along with recommended measures for prevention of such occurrences.

3.3 Legislation and Industry Standards

The emergency response planner should identify federal, provincial and local regulations which apply to his or her operation. Where appropriate, regulatory agencies should be contacted for identification of requirements for the environment, pipelines, mining, fire, oil and gas, boiler and pressure vessels, dangerous goods, transportation, health and safety, and other operational considerations.

In certain cases a particular industry may be bound to follow procedures recommended in codes of practice. Industry associations must be contacted in identifying appropriate codes.

Use of the Canadian Standards Association Standard (CSA) Z731 - M91 *Emergency Planning for Industry* is recommended in conjunction with these guidelines.

3.4 Emergency Organization and Responsibilities

This section should identify the transition from normal operations to emergency operations and the delegation of authority from operations personnel to emergency response personnel. For this purpose, the plan should identify an emergency response organization with appropriate lines of authority. Responsibilities for decision making should be clearly shown in an emergency organization flow chart.

One example of a commonly-used emergency response organization is the Incident Command System (ICS). The ICS is an organized approach to effectively control and manage emergency operations. The emergency response is categorized into functional components and responsibility for each component assigned to the appropriate individual or agency. The individual in charge of the ICS has the final authority to make the decisions and has a complete responsibility for the management of the incident.

For a small incident, the individual in charge of the ICS may perform many tasks of the ICS and there may be little or no delegation of tasks to subordinates. A large complex incident may require many employees and difficult, time-consuming efforts to control. In these situations, the individual in charge of the ICS will want to delegate some of the functions such as medical services, evacuation, water supply, resources, monitoring, media relations, safety, site control, financing, and legalities. Therefore, no matter what the size or complexity of an incident, by implementing an ICS there will be one individual to make decisions, give directions, and coordinate communications.

Regardless of the type of emergency response organization structure to be used, the plan should identify specific individual roles: the person having complete authority, the chain of

command, on-scene authority, company spokesperson(s), personnel responsible for remedial actions, technical, legal, risk management, financial and medical advisers, media and public relations personnel, etc. This information (responsibilities, duties, individual's position or job title, etc.) should, when possible, be condensed in flow charts and check lists. Sufficient details should be provided to ensure that all critical activities are covered.

3.5 Resources

This section will identify sources of local assistance including telephone numbers and names of contacts for:

- fire departments
- police
- municipal and provincial agencies
- hospitals
- doctors
- other company facilities
- mutual aid organizations
- co-operatives

Other resources that should be considered to assist in the incident include:

- helicopter and air transport services
- surface transport services
- safety and monitoring equipment suppliers
- spill response and/or cleanup services

3.6 Internal Alerting

In an emergency, information must be communicated quickly and accurately throughout the affected organization.

The purpose of this portion of a plan is to establish an effective emergency communication network and a procedure for the prompt notification of individuals and agencies involved in an emergency response.

The section must identify means for 24-hour notification of first responders and officials who can provide direction and control to the response effort and who can authorize evacuation. A notification guide should also include a list of backup personnel for emergency response and their telephone numbers (cellular, pager, home numbers). To

prevent system breakdown, an "alternate" person should be designated for each key position of designated responsibility.

The notification procedure may include flow charts and checklists indicating who should be involved, who has the responsibility to notify these individuals, how the notification is accomplished (e.g., paging systems, cellular or mobile phones) and the use of "fan out" (a call to one person/agency who in turn calls one or more key individuals during major emergencies). These numbers and checklists may be posted in critical areas for ready use or distributed as pocket cards.

3.7 External Alerting

The plan should describe how and when the fire and police departments, emergency measures organizations, federal and provincial authorities, news media, and volunteer or off-duty workers will be contacted during working and non-working hours. The responsibility may be designated to senior company personnel. Contacts for reporting purposes should also be included in the contact telephone listing. Roles and responsibilities of all external organizations and agencies involved in the emergency response and/or support function should be clearly defined. Duplication should be eliminated by ensuring coordination among the various agencies that provide similar services.

3.8 Communications

During an emergency, effective and reliable communications equipment and procedures are vital. This section of the plan should detail the types of communication equipment to be used by personnel during an emergency response. Since normal means of communication can break down in an emergency, alternative means must be considered. Cellular telephones, public address systems, two-way radios and messengers can be used. Portable and mobile two-way radio equipment can be particularly valuable because of flexibility.

Training and arrangements may be necessary to ensure that telephone services are available for official calls during an emergency and that unauthorized calls will not be placed. Site telephone switchboards and telephone circuits may quickly become jammed with calls, making telephone communications difficult unless proper provisions such as special circuits are made available. Direct hot lines that are not available to outside lines may be considered for critical communications.

3.9 Public Affairs

A good public relations program is extremely important in an emergency situation. Inquiries will normally be received from the media, government agencies, local organizations and the general public. This section of the contingency plan should include a public relations or media plan. It should identify a public affairs representative or a communications committee, well-equipped and trained in media relations.

Initial releases should be restricted to statements of facts such as the name of the installation involved, type and quantity of spill, time of spill, and countermeasure actions being taken. All facts must be stated clearly and consistently to everyone. Discrepancies will raise unnecessary concerns and speculation.

Plans should also be developed to utilize local radio and television stations for periodic announcements during an emergency. This will also assist in reducing rumours and speculation.

4.0 EMERGENCY RESPONSE

4.1 Response Action Decision

A contingency plan should have an emergency classification guide, depending on the severity and potential impact of an emergency.

The three levels of emergencies may be identified as follows:

- **LEVEL I:** minor spills requiring an on-site worker to respond and take necessary corrective actions.
- **LEVEL II:** intermediate level spills requiring response by on-site or off-site trained staff but posing no danger to the public.
- **LEVEL III:** a major incident beyond the resources of a single facility, where there are subsidiary problems to complicate the situation such as fire, explosion, toxic compounds, and threat to life, property and the environment. Assistance will be required from local, regional, and/or provincial organizations. The media will be present and politicians at all levels will be requesting action.

Incident detection, information gathering and action decisions are the first steps in responding to an emergency incident. All these steps may occur over a short or protracted time period depending on the circumstances and magnitude of the incident. The plan should identify the responsibility of the personnel having on-scene authority to evaluate the situation, assess the magnitude of the problem and activate the emergency response plan.

A flowchart or decision tree posted in the facility or distributed as a pocket guide will assist in ensuring these first critical decisions are made.

4.2 Plan Activation and Response Mobilization

Normally, upon receiving initial notification of an incident involving release of a hazardous chemical into the environment, the individual having on-scene authority will assess the magnitude of the problem and potential threat to personnel, equipment, and environment. If the situation warrants, the person having authority to invoke the emergency response plan will activate the plan, notify members of the response team closest to the site of the incident and, as soon as possible, report to the on-scene coordinator. Situations must be assessed on an on-going basis to develop an appropriate response strategy.

For each type of emergency, the plan should include a specific Emergency Action Checklist. The action items may include the following commands:

- identify the nature of the emergency and ascertain if there are casualties.

- locate the source, the area of immediate risk and the potential for escalation.
- raise the alarm, alert the Emergency Response Services and activate the appropriate warning system.
- mobilize the appropriate resources to isolate the hazard as far as possible and to implement "first aid" remedial actions.
- initiate procedures for the protection of personnel, plant, property and the environment. Consider the need to evacuate non-essential personnel and the need for an emergency shut-down of operations. A detailed procedure for each foreseeable emergency should be included in the plan.
- implement procedures for the protection of vital resources, continuity of critical services and security of the property and records.
- arrange to account for personnel and to log events.
- activate emergency communications links. Notify senior personnel, the appropriate agencies and neighbours where appropriate.
- liaise with officers of the emergency services and with other senior personnel as they arrive on-site, and cooperate as required.
- call for further emergency assistance as may be necessary.
- keep abreast of developments and ensure that the means of giving and receiving information, advice and assistance are functioning effectively, including that related to public relations.
- as appropriate, implement approved procedures for rehabilitation.

4.3 Incident Site Security

Emergency response plans should identify the need for security after analyzing all potential risks at the incident site.

In addition to preventing unauthorized persons from entering the site, security will assist in protecting human life, preventing or minimizing personal injury, protecting vital information and resources, and restoring normal operations.

4.4 Response Action/Containment/Cleanup

This section should describe methods to minimize danger for each type of emergency, and the location, capability, and limitations of equipment to be used.

The plan should state which fire suppression agents are to be used and under what conditions, whether a fire should be allowed to burn or be extinguished, which volatile liquids can be neutralized or diluted, what methods are to be used to deal with water- or air-reactive substances, etc.

Methods for dyking, storing, transferring and disposing of hazardous materials should also be specified.

The plan should list available on-site and off-site equipment, how it is to be accessed and who has the responsibility for it. The plan should also describe how people and equipment will get to the site, how they will be supported during the crisis and how crews will be supplied for the duration of the incident. Depending on the size of the industry, this section may appear as an appendix.

4.5 Emergency Operations Centre

During emergencies, emergency response operations should be directed from an Emergency Operations Centre (EOC). The EOC should be removed from potential hazards. In the event the main centre cannot be used, one or more alternate locations should be selected as back-up. Consideration should be given to the types of potential emergencies in order to provide maximum safety to personnel and equipment. Preference should be given to non-combustible buildings of either steel frame or reinforced concrete construction.

In case a complete site evacuation becomes necessary, an off-site command post may also be required. This could be a mobile facility such as a truck outfitted with emergency coordination equipment.

The functions of the EOC may include:

- notification of internal and external personnel and agencies
- situation assessment
- planning and evaluation of response actions
- mobilization of response equipment, personnel, and resources
- liaison with on-scene response coordinator
- documentation of events, decisions and activities

4.6 Evacuation

The purpose of this section is to ensure a safe and orderly emergency evacuation of each area or the entire plant. If required, the plan should also include procedures for the evacuation of the surrounding community. The following elements must be considered when developing evacuation plans:

- need for an alarm system capable of defining different areas and/or degrees of evacuation.
- maps showing both the primary and alternate evacuation routes.
- designation of primary as well as alternate off-site assembly areas.

- designation of employees responsible for checking the evacuation area and for taking personnel counts at the assembly area to ensure that the area has been safely evacuated.
- designation of emergency escape equipment.
- providing dispersion estimates for worst and most likely gas/vapour releases to better define the affected areas.
- procedures to increase the degree/extent of areas to be evacuated if the emergency situation escalates.

Evacuation decisions require knowledge by local authorities of the projected path of an airborne chemical cloud, atmospheric dispersion rate, and ground level concentrations. The ability to warn residents on a rapid and reliable basis is also required. Use of appropriate warning systems such as sirens, emergency broadcast systems, mobile public address systems and/or house-by-house contacts should be specified in the plan.

In some instances it may be safer for citizens to remain inside with doors and windows closed rather than to be evacuated. A plume may move past homes very quickly. In these situations, the plan should include appropriate procedures to warn downwind residents to shut off all circulation systems including heating, air conditioning, vent fans and fire places.

Note that in British Columbia the ability to give mandatory evacuation orders is limited to the Fire Commissioner under Section 2 of the Fire Services Act. Evacuation plans should reflect this legislative authority.

4.7 Disposal of Spilled Contaminants and Debris

This section should contain procedures for the removal of recovered spilled material and contaminated soil or absorbents and location of temporary and/or permanent storage facilities for contaminated materials. The various possible treatment and disposal options such as incineration, reprocessing, burying, etc. should be covered in the plan along with procedures for obtaining the required approvals or permits from government agencies.

4.8 Site Restoration/Remediation

This is the action taken to restore the affected environment to the pre-spill conditions. The required degree of restoration will usually be determined through consultation between the party responsible for the spill and the government regulatory agency with primary responsibility in that situation.

Restoration can include physical removal of contaminated surface materials, high-pressure washing, chemical cleaning, replacing of contaminated beach materials, restocking of lakes, and bioremediation.

4.9 Post-Incident Evaluation

The plan should specify that a post-incident evaluation be done on both mock exercises and actual emergency incidents and describe the manner in which the evaluation is to be done. The primary purpose of the post-incident evaluation is to identify from the spill response operation the weaknesses or strengths in the Action Plan and to make appropriate corrections to the plan. Other uses for post-incident evaluation include accounting, legal, and public relations matters.

The post-incident evaluation should include the following:

- suitability of the organization structure, equipment, communication system, etc.
- adequacy of training, alarm systems, contingency manual, control centre, communication plans, security, spill containment and recovery procedures, monitoring, etc.
- appropriateness of the emergency response action plan, media communications plan, mutual aid plans, etc.

An emergency response plan should provide for a written report on each incident. The report should include:

- a general description of the incident
- source and cause of the incident
- description of the response effort
- quantity of the spill and percent recovered
- itemized cleanup costs
- recommendations for preventative and mitigative measures
- plans for upgrading emergency preparedness and response plans

5.0 TRAINING AND PRACTICE DRILLS

5.1 Training

Competency in responding to emergency incidents requires a complete understanding of the roles and duties of each person responsible on the team. Comprehensive training in the use of emergency response equipment and personnel protection devices and tactics is necessary to ensure the best response capability. Provision for training is an integral part of a complete contingency planning and implementation program. Initial training must be followed by periodic updates to maintain familiarity with all aspects of the plan.

This section of the plan should provide details of training programs for the company personnel and mutual aid agencies involved in responding to an emergency. The amount, type and frequency of training for each member of the team should be clearly spelled out.

Training should be provided at least annually and in the following situations:

- for new employees during their orientation period
- for existing employees when there is a change in their duties
- when new equipment or materials are introduced
- when emergency procedures are revised
- when a drill indicates need for improvement

It is wise to extend training as far as possible, even beyond the plant gates. The plan should provide for familiarizing local agencies such as fire, police and ambulance staff with the potential hazards of the operation.

5.2 Practice Drills

This section should provide for periodic simulation exercises or practice drills. It is important to develop employee skills and evaluate the adequacy of the contingency plan through the use of mock exercises or drills. The objectives of a drill include evaluation of the following:

- practicality of the plan (structure and organization)
- adequacy of communications and interactions among parties
- emergency equipment effectiveness
- adequacy of first aid and rescue procedures
- adequacy of emergency personnel response and training
- public relations skills
- evacuation and personnel count procedures

Drills may be conducted in various forms such as desktop, on-site or computer-synthesized. The complexity of the drill may be increased as the response team gains proficiency. Drills must be frequent enough to ensure that the response team maintains proficiency in all aspects of the contingency plan. Drills should be conducted in a variety of situations. It is also desirable to include mutual aid organizations and public emergency response organizations in these drills.

6.0 PLAN EVALUATION

This section of the plan should describe step-by-step procedure by which the plan may be evaluated internally. The purpose of evaluation of an emergency plan is to determine the adequacy and thoroughness of the plan. The ease of understanding and using the plan will also be important considerations.

7.0 PLAN UPDATES

A procedure should be in place to update the contingency plan on a regular basis so that its call-out numbers and procedures are current. When an amendment is made to a plan, the amendment date should be noted on the updated page of the plan. A senior employee of the company should be designated to ensure that all plan-holders are notified of changes as soon as possible. Plan-holders should be requested to verify that they have received the changes.

The most common amendments include telephone listings, response personnel, equipment, chemicals handled, emergency services available and resource lists.

Plan holders should be notified immediately of any key changes regardless of review period.

8.0 APPENDICES

In an emergency situation it is extremely important that response personnel have immediate access to vital information. For this purpose some of the information may be organized in easy-to-follow tables in the appendices.

Types of information that may be included in the appendices include:

- response team and key company personnel call out list
- provincial, federal and local government agencies, news media and medical services telephone list
- community residents contact list
- facility maps, drawings and product hazard list
- organization, roles and responsibilities
- emergency incident report forms
- emergency shut down procedures
- on-site mobile and emergency equipment list by location
- off-site mobile and emergency equipment list by location
- equipment inspection and maintenance schedules

- air- and water-quality monitoring procedures
- weather information contacts
- statutes/laws/regulations (e.g., Spill Reporting Regulation)
- emergency evacuation plan and escape routes
- cleanup contractors
- mutual aid contacts
- decontamination procedure
- material safety data sheets
- emergency response manual distribution list

III

REFERENCES

1. Canadian Chemical Producers Association, TEAP, TRANSCAER, Transportation Code of Practice.
2. The Canadian Manufacturers' Association, Simplified Guide to Emergency Planning, 1989.
3. Canadian Standards Association (CSA-Z731-M91), Emergency Planning for Industry, May 1991.
4. CFR 129.1910, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities—US Department of Health and Human Services.
5. Commission of the European Communities, Emergency Planning for Industrial Hazards, 1988.
6. Environment Canada, Bhopal Aftermath Review: An Assessment of the Canadian Situation, March 1986.
7. Hazardous Materials, Managing the Incident, 1988.
8. Hazardous Materials Emergency Planning Guide, United States National Response Team, March 1987.
9. Incident Command System, Fire Protection Publications, 1989.
10. Ontario Ministry of Environment, Planning for Spill Contingencies, 1989
11. Saskatchewan Environment and Public Safety Guidelines for the Preparation of an Emergency Response Contingency Plan, January 1989.
12. Transport Canada, Dangerous Goods Guide to Initial Emergency Response, Dangerous Goods Directorate, 1986.

IV

MINISTRY OF ENVIRONMENT, LANDS AND PARKS REGIONAL OFFICES

B.C. Environment, Lands and Parks
2569 Kenworth Road
Nanaimo, British Columbia
V9T 4P7
(758-3951)

B.C. Environment, Lands and Parks
10334-152A Street
Surrey, British Columbia
V3R 7P8
(584-8822)

B.C. Environment, Lands and Parks
1259 Dalhousie Drive
Kamloops, British Columbia
V2C 5Z5
(374-9717)

B.C. Environment, Lands and Parks
3547 Skaha Lake Road
Penticton, British Columbia
V2A 7K2
(493-8261)

B.C. Environment, Lands and Parks
617 Vernon Street
Nelson, British Columbia
V1L 4E9
(354-6355)

B.C. Environment, Lands and Parks
1617 Baker Street
Cranbrook, British Columbia
V1C 4B4
(426-1475)

B.C. Environment, Lands and Parks
1011 - 4th Avenue
Prince George, British Columbia
V2L 3H9
(565-6452)

B.C. Environment, Lands and Parks
540 Borland Street
Williams Lake, British Columbia
V2G 1R8
(398-4452)

B.C. Environment, Lands and Parks
10142 - 101st Avenue
Fort St. John, British Columbia
V1J 2B3
(787-3283)

B.C. Environment, Lands and Parks
3276 Alfred Street, Bag 5000
Smithers, British Columbia
V0J 2N0
(847-7259)